a device for determining queries in said plurality of queries having said at least one computation and sharing one or more elements in common with the user query to provide a set of related queries;

a computing device for computing a result of said first computation for the [attribute-value list] attribute-valued string associated with each query in said set of related queries;

a comparator for comparing the results associated with said set of related queries to determine one or more queries having the greatest-valued result or one or more queries having the least-valued result; and

a control device for controlling said device for assisting to assign another computation from said plurality of computations as said first computation.

REMARKS/ARGUMENTS

In light of the above-amendment and remarks to follow, reconsideration and allowance of this application are requested.

In the previous office action dated August 9, 2002 (Paper No. 9), the Examiner rejected claims 29, 37, 39, 50, 54, 57, 62, 63, 65-67, 76, 93, 94 and 96 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claimed the subject matter, namely the claimed feature "string," which applicant regards as the invention. During the November 25, 2002 interview, the Examiner informally indicated that the present invention is patentable over the U.S. Patent 4,490,811 (Yianilos et al.) and U.S. Patent 5,802,515 (Adar et al.). Accordingly, in attempt to expedite the prosecution of this application, applicants agreed to replace every instance of the word "string" to "list".

However, the Examiner has now raised objections to the drawings and the Specification because the drawings and the Specification allegedly does not recite "attribute-value list." Applicants respectfully direct the Examiner's attention to page 3, lines 11-17 of the Specification which provides support for "attribute-value list". Regardless, in light of this new rejection after applicants have amended the claims to expedite the prosecution of this application and accommodate the Examiner's position, applicants have amended claims 29, 34, 35, 37, 39, 50, 54, 55, 57, 62, 63, 65-67, 76, 93, 94 and 96 back to its original form. That is, the term "attribute-value list" in these claims has been amended to "attribute-valued string," as originally recited in claims 29, 34, 35, 37, 39, 50, 54, 55, 57, 62, 63, 65-67, 76, 93, 94 and 96. Applicants respectfully directs the Examiner's attention to page 6, lines 1-7 of the Specification, wherein the

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applicants clearly define the term "attribute-valued string": "a computation is defined to be a computer implementation of a mathematical function that maps <u>an n-tuple of attribute-value pairs, referred to as an attribute-value string</u>, to a real number ..." (Page 6, lines 1-3). It is appreciated that the term "attribute-value pairs" are well-known to one of ordinary skill in the art. Accordingly, applicants respectfully submit that their invention is defined in clear and definite term, as required by U.S.C. § 112, and respectfully request that the objections to the drawings and the Specification, and the previous rejection (see Paper No. 9) of the claims under 35 U.S.C. § 112, second paragraph, be withdrawn.

Claims 29-96 have been rejected as allegedly being unpatentable over U.S. Patent 6,240,411 (Thearling) independently and in combination with either U.S. Patent 4,490,811 (Yianilos et al.) or U.S. Patent 5,802,515 (Adar). Applicants respectfully traverse these rejections.

Applicants submit that Thearling is not prior art under 35 U.S.C. § 102 and the § 103 rejections in Paper No. 13 based on Thearling are improper and should be withdrawn. As stated in the enclosed Declaration, applicants respectfully submit that well prior to the June 15, 1998 filing date of the Thearling patent, the reference invention was conceived and reduced to practice. The Thearling patent is therefore inapplicable as § 102 prior art and a reference that does not qualify as prior art under § 102 cannot be basis of a rejection under § 103. Applicant therefore respectfully request that the rejection based on allegedly obviousness in view of the Thearling patent be reconsidered and withdrawn.

Moreover, contrary to the Examiner's assertion, Thearling does not teach or suggest "determining queries in a plurality of queries having said at least one computation and sharing one or more elements in common with the user query to provide a set of related queries," as called for in independent claim 29 and similarly in independent claims 50, 54, 57, 76, 93 and 96. In fact, col. 5, lines 10-36 in Thearling cited by the Examiner, merely describes a generic query interface to enable a user to create a "current query" by selecting a database table and by selecting values for attributes in that table. "The interface may include an area for selecting the form of the current query being edit[ed] or constructed, as illustrated at 53a" (Thearling, col. 5, lines 9-10). Accordingly, applicants respectfully submit that Thearling merely describes the process of constructing or editing a user query using an interface and does not teach or suggest determining related queries sharing one or more elements in common with the user query.

For example, if a user creates a query examining two fields within a table: age (to be greater than 25) and income (to be greater than thirty thousand dollars per year), such as shown in Fig. 5 of Thearling, then the present invention would generate the following exemplary queries as a set of related queries: (1) {(age > 25)}, (2) {(income >30,000)}, (3) {(age > 25) and (income >30,000)}, (4) {(age > 25) and (income>30,000) and (sex = male)}, (5) {(age > 25) and (income >30,000) and (sex =female)}, (6) {(age > 25) and (income>30,000) and (sex = male) and (occupation = white collar}, (7) {(age > 25) and (income >30,000) and (sex = female) and (occupation = white collar)}, (8) {(age> 25) and (income>30,000) and (sex = male) and (occupation = blue collar}, (9) {(age > 25) and (income >30,000) and (sex = female) and (occupation = blue collar)}, and so forth, as a set of related queries. Applicants respectfully submit that Thearling does not teach or suggest determining such related queries, as called for in the claims of the present invention.

In addition, Thearling teaches away from the present invention. Thearling describes reducing the data set (i.e., result) for a given query, whereas the present invention teaches increasing the data set (i.e., result) for the given query. Thearling describes a conventional process of handling multiple attribute-value pairs in a query, wherein data set is obtained for each attribute-value pair of the query. The final result(s) is a result that appears in the data set of each attribute-value pair. In other words, Thearling obtains the result of the query by reducing the number of the data sets (reducing the number of records) to be considered. (See Thearling, col. 12, lines 35-37 and lines 48-49). Whereas, the present invention operates on the principle of expanding the number of data sets (expand the number of records) to be considered so that the final result is the best possible result, i.e., a global maximum or minimum. Therefore, none of the cited references independently or in combination teaches or suggests the invention as claimed in claims 29-96.

Further, contrary to the Examiner's assertion, Thearling does not teach or suggest determining computationally related queries, as called for in claims 54 and 93. Col. 4, lines 10-47 in Thearling, merely describes the process of eliminating duplication of records. It is appreciated that Thearling does not even teach or suggest processing a query with multiple computations.

Furthermore, contrary to the Examiner's assertion, neither Thearling, Yianilos et al. or Adar teach or suggest pre-determining a set of computationally related queries and pre-determining queries having the greatest-valued or least-valued result from the set of

computationally related queries, as called for in claims 41, 50 and 76. It is appreciated that the term "pre-determining" means determining these related queries before receiving the user query. That is, the present invention pre-determines these related queries in advance by examining the entire database records or data sets without knowing the "attribute-valued strings" of the user query. Yianilos et al. describes "scrutiniz[ing] the data as it passes, looking for records that are very similar to the query provided" (col. 19, lines 4-5); "[a]s records pass by on the data bus 338, the records are received by the associator circuit on interface 372 over bus 374 where the records are merged with query characters transmitted over bus 376" (col. 19, lines 29-32); and "the three associators forward their 'opinion' of how similar the record and the query were" (col. 20, lines 5-6). Portions of Yianilos et al. cited by the Examiner merely describe comparing the records to the user query, and does not describe pre-determining computationally related queries without using the user query.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

* * *

The Commissioner is hereby authorized to deduct the extension fee ($55.00) from Deposit Account No. 50-0624, under Order No. NY-VIR 201-US (10001987) from which the undersigned is authorized to draw.

Dated: Respectfully submitted,

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